

In the claims:

Following is a complete set of claims as amended with this Response.

1. - 23. (Cancelled)

24. (New) An apparatus comprising:

a graphics controller of an entertainment system to generate commands for controlling a tuner of the entertainment system, the commands being generated in a first protocol;

a microcontroller of the entertainment system coupled to the graphics controller to receive the commands from the graphics controller, to identify the controlled tuner to which the commands are directed, and to convert the commands from the first protocol to a second protocol specific to the controlled tuner, the microcontroller being coupled to a wired addressable control line, to send and receive addressed control and command data, including the commands from the graphics controller to the identified tuner, using an assigned address of the identified tuner through the control line; and

the controlled tuner having an external control line interface coupled to the control line to receive the addressed commands from the microcontroller in the second protocol specific to the controlled tuner, the controlled tuner further comprising a video connection to receive modulated video signals and a video output to provide demodulated video signals based on the received modulated video signals, the external control line interface being separate from the video connection.

25. (New) The apparatus of Claim 25, wherein the control line is a bus shared with multiple components, each component having a different address for communications on the bus.

26. (New) The apparatus of Claim 26, wherein the control line is coupled to multiple components through a daisy-chained connection.

27. (New) The apparatus of Claim 24, wherein the controlled tuner further generates command responses in the second protocol and sends the command responses addressed to the microcontroller through the external control interface and wherein the microcontroller receives the command responses over the control line in the second protocol, converts them to the first protocol and transmits the converted command responses to the graphics controller.

28. (New) The apparatus of Claim 24, wherein the controlled tuner external control line interface is further coupled to other addressable components and wherein the controlled tuner communicates data and control signals in the first protocol addressed to other components independent of the microcontroller.

29. (New) The apparatus of Claim 24, wherein the controlled tuner sends addressed data and control signals in the first protocol to the microcontroller through the external interface.

30. (New) The apparatus of Claim 29, wherein the microcontroller receives the addressed data and control signals from the controlled tuner, converts the data and control signals from the second protocol to the first protocol and send the converted data and control signals to the graphics processor.

31. (New) The apparatus of Claim 24, wherein the graphics controller comprises a system processor coupled to the microcontroller to generate the commands in the first protocol to control the tuner and to control other functions of the entertainment system.

32. (New) The apparatus of Claim 24, wherein the microcontroller further comprises a look-up table for the tuner and wherein the microcontroller converts the commands from the graphics controller by applying the commands in the first protocol to the look-up table.

33. (New) The apparatus of Claim 24, wherein the microcontroller further comprises an instruction stack specific for the controlled tuner and wherein the microcontroller converts the commands in the first protocol by applying instructions from the tuner-specific instruction stack.

34. (New) The apparatus of Claim 24, further comprising a second tuner to receive modulated video signals through a video connection and to provide demodulated video signals, the second tuner having a second external control line interface separate from the video connection to send and receive control and command data in a third protocol different from the first and second protocols and specific to the second tuner at the second external control line interface;

35. (New) A method comprising:
generating generalized instructions in a first protocol at a graphics controller of an entertainment system to control a tuner of the entertainment system;
receiving the generalized instructions in the first protocol at a microcontroller separate from the graphics controller;

identifying the tuner to which the generalized instructions are directed;
determining an address assigned to the identified tuner;
determining a communications protocol for the identified tuner as a second protocol different from the first protocol;
converting the generalized instructions in the first protocol to tuner control and command data in the identified second protocol; and
transmitting and receiving control and command data to and from the identified tuner using the determined address through a shared wired control line coupled to the identified tuner.

36. (New) The method of Claim 35, further comprising:
receiving control and command data responses in the second protocol at the microcontroller from the first tuner through the shared control line;
converting the received command responses to the first generalized protocol; and
transmitting the converted command responses to the graphics controller.
37. (New) The method of Claim 35, further comprising:
receiving at the microcontroller from the graphics controller generalized instructions in the first protocol for a second tuner;
determining an address assigned to the second tuner;
converting the second tuner generalized instructions to tuner control and command data in a third communications protocol specific to the second tuner; and
transmitting the third protocol tuner control and command data through the shared control line to the second tuner using the determined address.

37. (New) The method of Claim 35 wherein converting generalized instructions comprises applying the generalized instructions in the first protocol to a look-up table.

38. (New) The method of Claim 35, wherein converting the generalized instructions comprises applying instructions from a tuner-specific instruction stack.

39. (New) An article comprising a non-transitory machine-readable storage medium having stored thereon data representing instructions which, when executed by a machine, cause the machine to perform operations comprising:

generating generalized instructions in a first protocol at a graphics controller of an entertainment system to control a tuner of the entertainment system;

receiving the generalized instructions in the first protocol at a microcontroller separate from the graphics controller;

identifying the tuner to which the generalized instructions are directed;

determining an address assigned to the identified tuner;

determining a communications protocol for the identified tuner as a second protocol different from the first protocol;

converting the generalized instructions in the first protocol to tuner control and command data in the identified second protocol; and

transmitting and receiving control and command data to and from the identified tuner using the determined address through a shared wired control line coupled to the identified tuner.

40. (New) The medium of Claim 39, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising:

receiving control and command data responses in the second protocol at the microcontroller from the first tuner through the shared control line;

converting the received command responses to the first generalized protocol; and

transmitting the converted command responses to the graphics controller.

41. (New) The medium of Claim 39, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising:

receiving at the microcontroller from the graphics controller generalized instructions in the first protocol for a second tuner;

determining an address assigned to the second tuner;

converting the second tuner generalized instructions to tuner control and command data in a third communications protocol specific to the second tuner; and

transmitting the third protocol tuner control and command data through the shared control line to the second tuner using the determined address.

42. (New) The medium of Claim 39, wherein the instructions for converting the generalized instructions comprise instructions which, when executed by the machine, cause the machine to perform further operations comprising applying the generalized instructions in the first protocol to a look-up table.

43. (New) The method of Claim 39, wherein the instructions for converting the generalized instructions comprise instructions which, when executed by the machine,

cause the machine to perform further operations comprising applying instructions from a tuner-specific instruction stack.

44. (New) A video tuner comprising:

a system processor of an entertainment system to receive user commands and to generate generalized instructions in a first protocol based on the received user commands to control at least one of a first and a second tuner;

a microcontroller of the entertainment system coupled to the graphics controller to receive the generalized instructions from the graphics controller, to identify a tuner to which each generalized instruction is directed, to determine an address for the identified tuner, to convert the received generalized instructions from the first protocol to control and command data in a protocol for the identified tuner, and to send and receive control and command data addressed to the respective identified tuner using the identified address through a shared control line to a control line interface of the respective tuner;

the first tuner having a first video connection to receive wireless video signals modulated over a carrier frequency, the tuner having a first control line interface separate from the first video connection to send and receive control and command data in a second protocol specific to the tuner to and from the system processor through a shared control line to the microcontroller;

a second tuner having a second video connection to receive wireless video signals modulated over a carrier frequency, the second tuner having a second control line interface separate from the second video connection to send and receive control and command data in a third protocol specific to the tuner to and from the system processor through the shared control line to the microcontroller.

45. (New) The video tuner of Claim 44, wherein the first tuner further generates command responses in the second protocol and wherein the microcontroller receives the command responses through the shared control line, converts the command responses to the first protocol and transmits the converted command responses to the system processor.

46. (New) The video tuner of Claim 44, wherein the first tuner control line interface further comprises an input/output interface to communicate data and control signals in the first protocol to external devices and wherein the microcontroller is coupled to the input/output interface to convert data and control signals between the first protocol and the third protocol.

47. (New) The video tuner of Claim 44, further comprising a look-up table for the first tuner and wherein the microcontroller converts the generalized instructions from the system processor to first tuner commands by applying the generalized instructions in the first protocol to the look-up table.

48. (New) The video tuner of Claim 4, further comprising an instruction stack specific for the first tuner and wherein the microcontroller converts the generalized instructions from the system processor to first tuner commands by applying instructions from the first tuner-specific instruction stack.